

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Expanding the Economic and Innovation	)	Docket No 12-268
Opportunities of Spectrum Through	)	
Incentive Auctions	)	
	)	

**COMMENTS OF SINCLAIR BROADCAST GROUP, INC.**

Sinclair Broadcast Group, Inc. (“Sinclair”) submits these comments in response to the Wireless Telecommunications Bureau’s (“WTB”) May 17, 2013, Public Notice seeking comment on possible 600 MHz band plan configurations.<sup>1</sup> The Public Notice in particular is focused on accommodating a variable band plan in which the amount of re-purposed spectrum varies from market to market. The Public Notice seeks comment on two possible frequency division duplex (“FDD”) band plans and two possible time division duplex (“TDD”) band plans, in each case depending on whether more or less than 84 MHz is cleared.

Sinclair opposes adoption of a variable band plan and urges the Commission to adopt a single, nationwide “down from 51” band plan that stops at or above Channel 37 and is divided into TDD license blocks. Some of the TDD allocations should permit high power (50 kW) operations.

**A Variable Band Plan Would be Inherently Inefficient and Wasteful of Spectrum**

Sinclair opposes variable band plans for several reasons. Market variation imposes additional layers of complexity in network and device design in an environment that is already extremely challenging. This complexity comes at a great cost, and that cost will persist through many generations of technology. Moreover, regional carriers will have little or no interest in

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<sup>1</sup> See *Public Notice*, Wireless Telecommunications Bureau Seeks to Supplement the Record on the 600 MHz Band Plan, DA 13-1157, GN Docket No. 12-268 (rel. May 17, 2013) (“Public Notice”).

licenses to “remnant” spectrum blocks because those carriers will assume, correctly, that device makers will not design for operation on those blocks unless required to do so by the largest carriers. Larger carriers will have less interest in remnant blocks because the cost of making tens or hundreds of millions of devices that can use those blocks is not justified when those blocks will be available only in the areas where incumbent carriers simply do not need additional spectrum.

A variable band plan would also introduce yet another layer of uncertainty in what is already a highly uncertain auction process. Uncertainty will drive some prospective reverse auction bidders to the sidelines and will depress prices in the forward auction. The marginal cost of each cleared remnant MHz/pop could well exceed the marginal revenue, perhaps vastly so, even to the point of preventing the auction from closing. If the FCC does close the auction but ultimately cannot pay the cost of relocating stations in areas where spectrum is not actually needed, the auction will fail.

As others have pointed out, and as the National Association of Broadcasters explains more fully in its comments filed earlier today in this docket,<sup>2</sup> any variable plan that places low power wireless bands co-channel with very high power broadcast assignments in adjacent markets is simply unworkable. Interference into broadcast signals will further complicate the FCC’s statutory mandate to preserve service areas in repacking, and interference into the wireless assignments will further diminish the value of the remnant blocks in the forward auction.

Although there is an ongoing debate whether additional wireless allocations are actually needed, there is no serious debate that the need, if any, is limited to the largest, most densely populated metropolitan areas. If the purpose of the auction is to allow the market to find the highest and best use of spectrum and bring more wireless broadband spectrum to market where it may be needed, then the only purpose of a variable band plan should be to bring *more* spectrum to market in

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<sup>2</sup> See, Comments of the National Association of Broadcasters, Docket 12-268 (filed June 14, 2013).

those densely populated areas than would be available elsewhere. In other words, a sensibly oriented variable approach would clear a certain amount of spectrum nationwide, plus some *additional* spectrum in the most densely populated areas. But what the Public Notice contemplates is just the opposite. The Public Notice proposes clearing what can be cleared in the largest markets and then clearing *additional* spectrum in smaller markets and rural areas, apparently just because it can be done.

The result of this approach would be more complex and expensive handsets, less rational network designs, dilution average of MHz/pop valuations, unpredictable and undesired interference environments, costly repacking of broadcast stations that otherwise could be left intact, and elimination of hundreds or thousands of low power stations and translators in areas where it is universally acknowledged there is no shortage of spectrum for mobile broadband. Future evolution of the broadcast service would be further constrained because there would be even less available spectrum for transition channels, even in rural areas. And the guard bands would fall in different places in different areas, making them far less valuable (or perhaps unusable) for unlicensed or secondary use, further compounding the perpetual inefficiency of the variable band plan approach. In short, variable band plans would result in eliminating established broadcast services in order to reclaim spectrum where it is not needed and deploy it where it will be underused, while seriously impairing the utility of the guard bands.

If some variation in assignments is unavoidable, the Commission should make narrow, targeted exceptions only where doing so can increase the amount of spectrum available in the most densely populated areas. Any other approach would reflect a policy that encourages and even mandates fundamentally inefficient use of spectrum for decades to come.

### **The Band Plan Should Stop at Channel 37 or Above**

Many of the same factors discussed above lead naturally to the conclusion that the band plan should stop at or above Channel 37. Because Channel 37 cannot be auctioned it is a natural stopping point. The record does not reflect any credible path to clearing more than the 84 MHz from Channel 51 to Channel 37 in all of the major markets. And any spectrum that cannot be cleared in all of the major markets is far less useful to wireless carriers, for the reasons discussed above. By trying to engineer an auction to reclaim spectrum where it is not needed and cannot be efficiently used, the FCC squanders the opportunity to create a far more rational and efficient band plan that will entice more participants to submit higher bids in the forward auction.

Unrealistic targets to reclaim more than 84 MHz also vastly overcomplicate repacking projections. The “120 MHz” goal identified in the National Broadband Plan was aspirational. With more than two years of number crunching behind us, it is clear to everyone that 120 MHz cannot be reclaimed in the largest markets (where demand may arguably exist) or in border areas. The FCC should optimize for the possible and work to make the most efficient use of the amount of spectrum that could be made available where needed. It would be folly to adopt a far less certain and far less efficient band plan just to pay homage to the 120 MHz target that was arbitrary from the start and unrealistic in the end.

Establishing a goal of a uniform nationwide band plan of up to 84 MHz, down from 51, would provide certainty, yield efficiency and prevent the auction from straying into the territory of negative returns at the margin. The FCC should not sacrifice these enormous and perpetual benefits for the short term and unrealistic goal of claiming more than 84 MHz where it is not needed.

## **All 600 MHz Blocks Should be Unpaired and Some Should Permit 50 kW Operation**

The Public Notice asks whether the Bureau should consider a “Down from 51” TDD plan.<sup>3</sup> The answer is unequivocally “yes”. The whole point of the incentive auction is to enable more capacity for mobile services because, it is argued, carriers have done all they can to squeeze the greatest efficiency from existing allocations. Repurposing spectrum and then allocating it in an inefficient way would be counterproductive at best.

We have asked the FCC on numerous occasions to think holistically about the UHF band and not to give undue weight to legacy systems and technologies. We have, in particular, argued that it makes no sense to rework the broadcast television band and repack hundreds of television stations so that they can use the same outdated technical standard the FCC mandates today<sup>4</sup>. It makes no more sense to adopt new wireless allocations and impose on them a band plan that reflects legacy technologies and architectures that are inefficient by today’s standards. The Commission should embrace, or at least permit, the most efficient, practical and flexible technologies available at the time it makes allocations and adopts band plans.

FDD is widely deployed. But then, so are all legacy architectures. FDD is a relic of first generation mobile voice service. It is not optimal for today’s data-centric traffic and it is far less flexible than TDD for accommodating future variations in traffic symmetry. This inflexibility breeds relative inefficiency, and that inefficiency is compounded by the need for a duplex gap.

Newer generations of wireless technologies focused on packet data services tend to use unpaired spectrum. LTE was designed end-to-end to combine FDD and TDD into a single technology solution for 4G and beyond. Its network architecture, protocol stack, radio

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<sup>3</sup> See Public Notice at 5-6.

<sup>4</sup> See, e.g., Comments of Sinclair, Docket 12-268 (filed January 25, 2013) at 5-8.

management, and MAC layers are identical for TDD and FDD. All of the core features of LTE and LTE-Advanced are identical for both FDD and TDD. Naturally, if only FDD assignments are made available, FDD networks will be built. Incumbent FDD operators will likely prefer FDD at the margin because their legacy networks are FDD. Low-band FDD allocations give low-band FDD incumbents a windfall: the inherent inefficiency is less of a burden on low-band FDD incumbents than it is on greenfield operators. An FDD band plan skews the auction towards low-band incumbents, to the detriment of competition, and is less efficient, to the detriment of the public interest.

Reasons to adopt TDD are plentiful, but the primary reason is driven by real cost advantages in technology and network migration, and more efficient use of the spectrum employed particularly as spectrum bands expand and new ones (such as 600MHz) are explored. TDD-LTE is scalable and future-proof. Existing operators globally are deploying 4G using basic LTE radios which may be limited to two transceivers. Future 5G wireless technology will use advanced antenna processing techniques (such as MIMO) to deliver far higher data rates. As LTE Advanced (Rel-10) standards and devices come to market, these systems will use “virtual aggregation” techniques across large swaths of unpaired spectrum to produce even higher data rates and capacity.

TDD’s key advantage is in its flexibility to configure channel capacity in response to asymmetric downlink or uplink traffic. This flexibility and ability to adapt to the nature of the traffic demand is the reason why it has always been the desired method for nearly all Internet-centered wireless technologies. And unlike FDD systems, TDD systems allow these configurations to change. FDD systems use a fixed, symmetric 50/50 distribution which is often sub-optimal and cannot be altered. TDD provides carriers with alternative and efficient means to dynamically allocate more of their spectrum to downlink traffic. Qualcomm argues the case for TDD in capacity

driven deployments.<sup>5</sup> If any of the carriers is to reach any truly “wide bandwidth”, they must put their hopes entirely into LTE-Advanced carrier aggregation.

A “Down from 51” TDD band plan would provide a critical mass of low band TDD wireless licenses. TDD reduces greenfield deployment costs, making it ideal for new entrants or incumbents deploying their first low band facilities. TDD is, therefore, both pro-competitive and more efficient. Band plans endure for decades. It makes no sense to adopt a less efficient and less flexible FDD-centric band plan that is wasteful of spectrum when the entire point of this process is to unleash more capacity for wireless growth. If the largest incumbent carriers truly face a spectrum crunch, they will find the means to overlay more efficient TDD technology on their legacy FDD networks.

Sinclair also urges the FCC to permit 50 kW operations in at least half of the TDD assignments. We have explained before why a “spectrum monoculture” of assignments, all made in the image of legacy wireless allocations, is a misguided approach.<sup>6</sup> As the mobile communication services market grows, it should naturally diversify. Public policy should enable and embrace that diversification. Higher power TDD blocks permit differentiation and innovation. They will attract different classes of bidders to the auction, providing greater assurance that the licenses will be assigned to the highest and best uses without an unnecessary bias towards incumbency. Sinclair would be prepared to bid aggressively on 50 kW TDD licenses divided into Economic Areas or similarly granular geographic sizes, and to deploy new and innovative services that would expand the wireless ecosystem.

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<sup>5</sup> See <http://www.qualcomm.com/media/documents/files/wireless-networks-lte-tdd-the-global-solution-for-unpaired-spectrum.pdf>

<sup>6</sup> See, e.g., Reply Comments of Sinclair, Docket 12-268 (filed March 12, 2013) at 4.

## Conclusion

For the reasons explained in these comments, Sinclair opposes adoption of a variable band plan. We urge the Commission to adopt a single, nationwide “down from 51” band plan that stops at or above Channel 37 and that is divided into TDD license blocks. At least some of the TDD allocations should permit high power (50 kW) operation. This approach will prevent diminishing returns of higher cost reclamation of remnant blocks that will bring lower auction proceeds, possibly causing the auction to fail altogether. It will provide the nation with more efficient and flexible assignments that are more accessible to new entrants and far more versatile, in the near term and in the long run.

Respectfully submitted,

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